

09/527,529
69605/99

6

REMARKS

Entry of this Amendment Under 37 CFR §1.116 is proper, since no new claims or issues are presented.

Claims 1-12 are all of the claims pending in the present Application. Claim 7 has been revised in a manner believed to remove any basis for restriction.

It is noted that, notwithstanding any claim amendments made herein, Applicant's intent is to encompass equivalents of all claim elements, even if amended herein or later during prosecution.

Claims 1, 3-6, and 10-12 stand rejected under 35 USC §103(a) as unpatentable over US Patent 5,541,753 to Raynes et al. Claim 2 stands rejected under 35 USC §103(a) as unpatentable over Raynes, further in view of Kuo et al, SID 94 Digest , Vol. XXV, page 927-930.

These rejections are respectfully traversed in view of the following discussion.

I. THE CLAIMED INVENTION

As described and claimed, for example by claim 1, the present invention is directed to a liquid-crystal display (LCD) including a liquid-crystal layer provided between a pair of substrates so as to be oriented to bend alignment. A phase compensation plate is provided outside each of the substrates. The retardation of a light passing through the liquid-crystal layer and the phase compensation plates is limited to a value $\frac{1}{2}$ or less of a minimum wavelength of the light relating to display. A circuit selectively applies a voltage across the liquid-crystal layer, the voltage being equalized for all colors in the liquid-crystal display.

09/527,529
69605/99

7

The present invention addresses the problem demonstrated in Figure 10 in which the electrooptical characteristic of the LCD exhibits a transmittance curve of a shortest wavelength color as differing from other colors (e.g., the other two primary colors), thereby causing the need for different applied-voltage settings.

In contrast, the present invention teaches the selection of a single applied-voltage setting based on the retardation of the shortest wavelength color filter.

II. THE PRIOR ART REJECTION

The Examiner alleges that Raynes essentially teaches the invention defined by claims 1, 3-6, and 10-12 but concedes that Raynes does "... not explicitly disclose a retardation value of a minimum wavelength of the light relating to display (i.e., blue color range of 388nm to 488 nm)." Nevertheless, the Examiner considers that the discussion in Raynes of visible light "... makes possible the claimed range of 380 nm to 488 nm, and such overlapping ranges are at least obvious."

However, a key feature of the present invention is that it addresses the problem of the electrooptical characteristic of the LCD shown in Figure 10 in which the blue transmittance curve first increases and then monotonically decreases. The red and green transmittance curves monotonically decrease. Therefore, different circuits are necessary to provide voltages that compensate for this difference in these curves.

To address this problem and allow a common applied-voltage circuit for all three colors, the present invention teaches that the applied voltage is selected based on the color having the shortest wavelength (e.g., the color blue). By correlating drive voltage with

09/527,529
69605/99

8

retardation of light of the shortest wavelength, the present invention eliminates the first section of the blue color curve in which transmittance increases.

In contrast, Raynes does not even recognize this problem. Indeed, the only mention of color filters in Raynes is the fleeting mention of color filters at lines 17 and 18 of column 1. There is no discussion or suggestion in Raynes of making any selection based on a specific color, let alone the color having the shortest wavelength.

The problem addressed in Raynes is quite different from that of the present invention. In Raynes, the problem is to provide an LCD having drive voltages less than 5 volts while providing a wide viewing angle. As described at lines 4-5 of column 4, the liquid crystal material is selected to be E7, having a refractive index anisotropy $\Delta n = 0.22$, which is considerably higher than that used in the present invention (e.g., see Figure 3 of the present application).

In paragraph 4 on page 4 of the Office Action, the Examiner stated that the claim language does not recite the features upon which Applicants argued as being a key benefit provided by the present invention.

In response, Applicants have amended the independent claims to recite a key feature of the present invention, as understood to incorporate Examiner Nguyen's helpful suggestion, in which a single voltage can be provided to the different-color electrodes, thereby providing a smaller electrode voltage circuit.

Applicants submit that Raynes clearly fails to teach or suggest this feature.

Hence, turning to the clear language of the claims, in Raynes there is no teaching or suggestion of " ... a circuit to selectively apply a voltage across said liquid-crystal layer, said

09/527,529
69605/99

9

voltage being equalized for all colors in said liquid-crystal display", as required by claim 1.

The remaining independent claims have similar language.

For the reasons stated above, the claimed invention is fully patentable over the cited references.

III. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 1-12, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

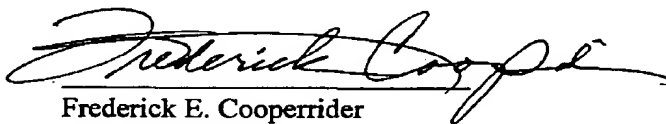
Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date:

7/20/05



Frederick E. Cooperrider
Reg. No. 36,769

McGinn & Gibb, PLLC
8321 Old Courthouse Road, Suite 200
Vienna, Virginia 22182
(703) 761-4100
Customer No. 21254